504 Let us compare for a moment the regions for which the Black and the Baltic Seas serve as ports. That for which the Black Sea affords an outlet does not extend more than 500 or 600 kilometers, while that served by the Baltic ports reaches as far as western Siberia. Thus, the Baltic region exceeds that of the Black Sea by several thousand kilometers.

000 Surely these facts, coupled with even the most cursory consideration of the Russian imperialistic policy, show beyond a doubt that in respect to the direct economic utilization of the southern ports, the setting up of a separate government by the Ukraine does not obstruct any fundamental interests of the Russian people. Briefly stated, Russia proper does not use directly the southern ports except Rostov, which is the outlet of the region of the Don and in part of the lower region of the Volga, but there is not such a vast difference between the Russian and Ukrainian interests that these minor details as to a common use of various ports can not be conciliated by special agreement.

Coal Fields of Ukraine Not Necessary to Great Russia

316 433 Proceeding directly to the third and last question, that involving coal and iron, we are confronted first of all with the geographic fact that it is really within the ethnographic limits of the Ukraine that are found nearly all the coal fields of Donetz, as well as most of the productive centers of anthracite. More than 90 per cent of the total output of coal of the Donetz basin, during the last years of normal exploitation, came from the Ukrainian regions, while the total production of coal of the Donetz basin reached 70 per cent of the general production of coal of the old Russian Empire, and we may increase this to 85 per cent, if we do not include in the total the output of Russian [438] Poland. Notwithstanding these percentages of production, the general statistics of railroad traffic, together with the data collected by the Special War Committee on the Supply of Fuel, show that nearly four-fifths of the Ukrainian coal and anthracite was used in Ukraine, one-fifth only being exported to Russia.

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The Ukraine has almost no fuel except the coal from Donetz. Northern and Central Russia, on the contrary, have wood, peat and coal from the south of Moscow. Northwestern Russia and the Baltic provinces never used the coal from Donetz, as it could not compete in price with the English or German coal. During the war, doubtless because the Baltic Sea was closed, they began to transport coal from Donetz to Petrograd. Now the Baltic Sea is reopened and its freedom guaranteed by the Allies. Therefore, English coal can regain its natural markets.

The industrial region of Moscow, as well as that of the Volga, received an enormous quantity of naphtha from Baku which competes as fuel with the coal of Donetz. When the conditions have again become normal, exports of naphtha will recommence, because the basin of the Volga is the natural outlet for the oil fields of Baku. The Urals and Siberia are supplied with local coal, while in western Siberia are found vast deposits, in the region of Kutznetsk. These beds are more extended and richer than those of Donetz, but the coal fields were scarcely worked because the means of transportation was very primitive. They can be joined to the Ural and Altai regions either by rail or water. Under these conditions the inexhaustible ore supplies of the Urals and the Altai district will supply the metal industry of Russia in such quantities that Russia will become metallurgically independent of the Ukraine. Thus the coal fields of Donetz, which have always been more Ukrainian than Russian, should in the future remain entirely Ukrainian.

Furthermore, the question of the basin of Donetz is not concluded. The ethnographic frontier of the Ukraine and of Russia passes through these coal fields. The Ukraine and Russia could easily, for their mutual interests, reach some understanding and modify this frontier. But in any event the most important part of the coal field should remain in the Ukrainian limits, because the facts up to date show how much more Donetz is bound to the Ukrainian industry than to that of Russia. The metallurgical industry alone of the Ukraine consumes nearly 30 per cent of the total production of the basin.

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2: Timoshenko S-4, 5 (no date) 1919 RD1 Ukraine R1
Soviet Union R2

Ukraine's Iron Supply Not Essential to Great Russia

We now come to the question of iron. Here also it is claimed that the economic development of Russia is impossible without the Ukrainian iron. But we can answer without the slightest hesitation that this affirmation is incorrect.

It is a fact that the Ukraine produced two-thirds or three-fourths of the iron of former Russia. She exported a considerable quantity into the old empire, but one cannot conclude that this situation will not change in the future. True, the development of the metallurgical industry in the Ukraine in the last forty years was much greater than in the Urals and the other provinces. But if we wish to draw more specific conclusions, we must remember that the beds of iron ore in the Ukraine are not very large. Those in the region of Krivy Rih in the Kherson government near that of Ekaterinoslav, which are now the principal source of the iron ore in the Ukraine, may exhaust themselves in a few decades as will the scarcely more abundant ore fields of Crimea.

It would be erroneous to assume that the metal production of the Ukraine would be adequate to the needs of all Russia for any great period of time. Knowing the probabilities of early exhaustion of the limited beds of Ukrainian ore, and in intelligent observance of the laws of conservation, Russia must, with that wisdom and foresight which has made for industrial soundness in all strong nations, increase her production of iron in the Urals and in Siberia. For the time being, however, and until Russia can bring into operation the products of her hitherto undeveloped areas, the Ukraine can and desires to maintain her place on the Russian markets with metals, as with sugar.

Economic Co-operation is Possible

It is the earnest desire of the Ukraine that her future economic relations with Russia be intensely co-operative and that the commercial relations of the two states under

259 During the last thirty or forty years, it is true, the
316 economic situation of the Ukraine has changed consider-
325 ably; three large industries have developed in the country:
651 the sugar industry, the mining and the metal industries. And one is tempted to say that this development was due to Russian protection. But is this quite correct? Undoubtedly the protection had some influence, but not as much as one might suppose. In the first place, one must not forget that in the Ukraine there are natural conditions much more favorable to these industries than in any other part of the Russian Empire. Certainly the sugar, metal and mining interests are among those which depend on the location of their raw materials and can never start in a place where these are lacking. Besides, these industries are infinitely more fostered by transportational advantages than by custom duties. The duties which were imposed on foreign coal did not prevent the importation of English coal into the Baltic provinces nor into Petrograd. On the other hand, even if all custom duties on foreign coal had been suppressed, it would never have penetrated into central Russia and there replaced the fuel of Donetz. As to the sugar, the situation in the Ukraine was perhaps even more favorable. As to metallurgy, it no doubt profited by the protective Russian tax. But there again the role of this tax was not very great. In fact, the products of Ukrainian metallurgy were heavy (rails, beams, tires, wheels, pipes, iron bars, etc.), and their manufacture was only slightly stimulated by the tax because of the great distances over which they had, in any case, to be carried. Protective tariff is much more necessary to those industries which supply finished products of light weight, but of these the Ukraine furnished very few. The textile industry of Moscow and of Poland profited much more by protection, as did many other branches of the industrial activities of central Russia.

Effect of Russian Imperial Methods in Ukraine

369 Therefore, by this system, the Ukraine had more loss
241 than profit. She was still a market for Russian and Polish industrial products, for which she paid high prices. But

3: Mirchuk S-4 (no date) 1949 RDl Ukraine RDl

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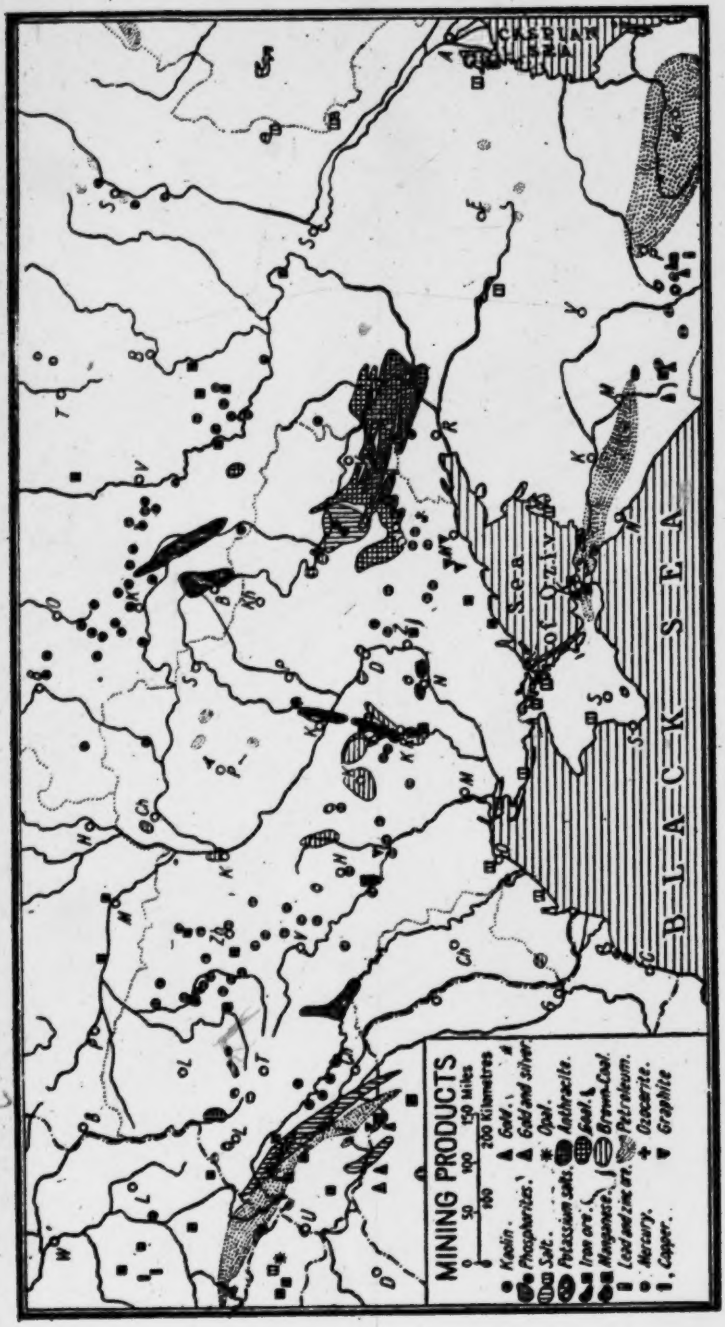

3: Mirchuk S-4 (no date) 1949 RDl Ukraine RDl

Table 8. Production of

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	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879
Donets Basin	256	330	595	617	573	842	957	801	1130	1253
Dombrowa Basin	330	301	298	336	402	408	423	612	1070	1085
Russian Empire	700	830	1100	1200	1300	1700	1900	1800	2500	2900
% of Donets Basin	37	41	54	52,5	44	49	50	44,5	45	43

	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902
Donets Basin	3930	4850	4890	5110	6790	7570	9220	11*	10,9	10,7
Dombrowa Basin	3160	3350	3680	3660	3760	4090	3970	4,2	4,2	4,3
Russian Empire	7600	8800	9100	9400	11,3*	12,3	14	16,2	16,6	16,5
% of Donets Basin	52	55	53,5	54,5	60,5	61,5	66	68	65,5	65

	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Donets Basin	25,3	27,6	26,6	28,7	25	9	5,6	4,6	5,8	7,2	8,1
Kuznetsk Basin	0,8	0,9	1	1,2	1,1	0,9	0,9	0,9	0,8	0,9	0,8
Soviet Union	29,1	31,8	30,9	34,5	31,3	12	7,2	7,2	8,2	11,3	12,7
% of Donets Basin	87	87	86	83	80	75	78	64	70,5	63,5	64

* From 1900 in Million t total for Empire from 1897.

2. Branches and Areas of Industry

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The Donets Basin is the center of the heavy iron industry, heavy engineering, the non-ferrous industry and the production of chemicals on a large scale. The many electricity and overland generating plants that have sprung up almost contiguously utilise coal waste as a rule and have a considerable capacity, the largest being those at Shterivka and Zujivka with 150 000 KW each. There was a lively demand for machinery, above all for agricultural machinery, while the metal industry never reached the same level. Before World War I Ukraine contributed scarcely 17 % of all those employed in the manufacture of metal wares in Russia, though it supplied $^2/_3$—$^3/_4$ of the raw materials required by the heavy iron industry throughout Russia. In 1934 the Ukrainian share in the manufacture of iron ore was constantly declining, so that metal goods of even fairly simple nature had to be imported.

Coal in Donets Basin

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1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892
1414	1495	1740	1758	1665	1883	2110	2060	2500	3110	3000	3140	3570
1285	1400	1400	1600	1665	1800	1990	2050	2420	2480	2470	2600	2890
3300	3500	3800	3900	3900	4300	4600	4600	5400	6200	6000	6200	7000
43	42,5	46	45	42,5	44	46	45	46,5	50	50	50,5	51

1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
11.6	13	12,9	14,2	18,2	17,9	17,7	16,7	19,9	21,4	25,3	27,6	26,6
4,8	4,8	3,6	4,6	5,4	5,6	5,7	5,5	5,8	6,4	6,9	3,8	—
17.9	19.6	18,7	21,7	26	25,9	26	24.9	28,4	31,1	36	35.6	30,9
65	66,5	69	65,5	70	69	68	67	70	69	70	78	86

1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
11.8	12,5	19,6	24,6	27,3	31	36,5	40,9	44	51	61,4	69,6	77,5	77,5
1	1	1,8	2,6	2,6	3	3,6	5,5	7,3	9,2	11,6	14,1	17,3	17,8
16.3	16,5	25,8	32.3	35.5	40	47,8	56,8	64,4	76,3	93,6	109	126	128
72,5	76	76	76	77	77,5	76,5	72	68,5	67	65,5	64	61,5	60,5

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The largest centers of production in the Donets Basin are Stalino, Makijivka, Kramatorska, Voroshylivhrad, Horlivka, Konstantynivka, Artemivske (Bakhmut), Slovianske etc. Mariupil is the exporting harbor.

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At the Dnipro Bend there are, among others, plants for best quality steel, ship-building yards, electro-technical factories and largescale chemical works. The gigantic power-station at Dnipropetrivske has a capacity of 558 000 KW. The main centers of production are Dnipropetrivske, Zaporizha, Dniprodshershinske, Kryvyj Rih and Nikopil. The exporting harbors are Mykolajiv and, for some products, Kherson.

The Donets Basin and the Dnipro Bend are frequently combined to-day and represent a many-sided economy on a wide basis of raw materials and power. As a combine it is contrasted with the Ural-Kusnetsk Combine (above all as regards coal and iron). Kerch with its ore mines and heavy industry gravitates towards the Donets Combine.

3: Mirchuk S-4 (no date) 1949 RDl Ukraine RDl

3. Production of Coal and Iron

See Table 8 and diagrams 3 and 4

Coal mining in the Donets Basin dates from the 18th century, 316 ● but at first only in order to supply the needs of the towns on the coast. It was only after railways were built in the sixties that the coal production of the Donets Basin developed. The railway as a wholesale consumer accounted for 28—35 %, and in some years 41—44 % of the production. In 1860, 100 000 tons of coal were mined; but this rapidly increased six to tenfold and soon exceeded the figure for the Dombrova Basin, the rival area in Imperial Russia.

The second factor which promoted development was the opening up of the iron ore area of Kryvyj Rih in the eighties. In 1884 the Donets Basin production represented 43.5 % of the production for the whole of Russia, a figure which had risen by 1914 to almost 70 %. During this period Donets Basin coal production was increased six-fold, while that of all other areas in Russia has increased three times, and world production two and a half time. In 1913 the Donets Basin produced 25.3 million t, almost 2 % of world production which placed this coalfield fifth among the coal-producing areas of the world.

In 1927 the pre-war figure was once more reached.

During the Five Year Plans it increased considerably as the remote areas where new industries were founded had to be supplied from the Donets, at least indirectly by exporting the products of heavy industry. The production for 1933—37 was 67 million t, more than two and a half times as much as the pre-war figure and 6 % of the world-production which had only increased $^1/_{10}$ since 1913.

In spite of this great absolute increase, the share of Ukraine in the total production of USSR steadily declined, from 77 % in 1927/28 to 50.5 % in 1937. This was mainly due to the forced increase in non-Ukrainian mines. As a result of shifting industrial centers east, the production of the Kusnetsk Basin alone rose in the period 1913—37 from 0.8 million t. to almost 18 million t., i. e. twenty-two fold while in the Donets Basin it increased only threefold. Capital investments were naturally correspondingly

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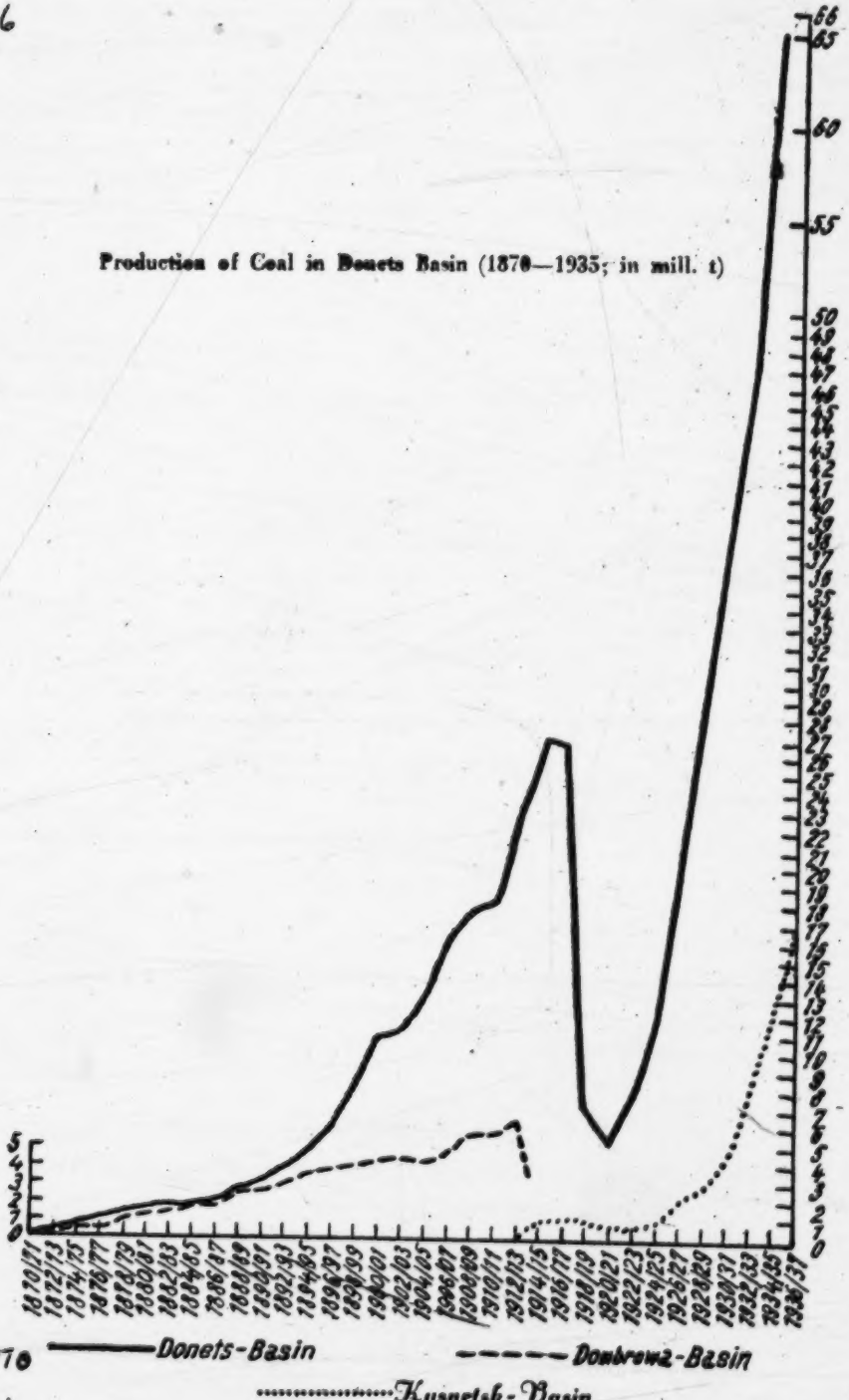

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Diagram 3

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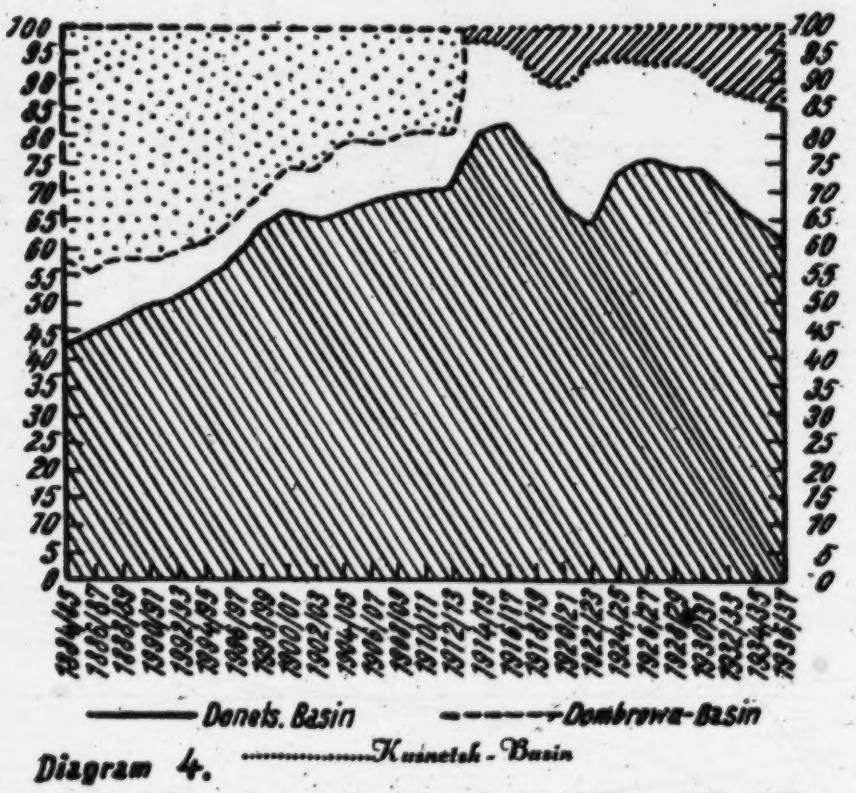

Diagram 4. Share of Donets Basin in the coal production of Russia (1884—1937)

higher in the Kusnetsk area, where the output capacity of a mine was 1.44 million t, or twice as much again as the corresponding figure for the Donets Basin (640 000 t).

The production of iron ore was developed from the Donets Basin because of the propinquity of coal. In 1868 Ukraine contributed scarcely 1 % of the total Russian production of 650 000 t. A change took place when the resources of Kryvyj Rih began to be exploited in the eighties. In a short time the figures for Ukraine exceeded those for Russia and Poland and, in twenty years' time, even those for the rich ore fields in the Ural. In the last year before World War I Kryvyj Rih with 6.4 million t. contributed 90 % of the steadily rising iron-ore production of Ukraine, and more than $^2/_3$ of the amount for

Table 9. Production of Iron Ore in

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	1868	1870	1873	1878	1880	1882	1883	1885	1987	1888
Ukraine	5	22	45	65	74	83	91	115	164	229
Ural	441	467	505	549	629	580	577	655	737	806
Russian Empire	660	800	900	920	1050	1000	1000	1100	1270	1450
% of Ukraine	3/4	3	5	7	7	8½	9	10½	13½	16

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Ukraine	3440	2375	2345	2740	3575	3560	3590	4020	4090	3755
Ural	1650	1765	1300	1105	1035	1380	1240	1105	1080	1155
Russian Empire	6100	4700	4000	4200	5100	5400	5300	5500	5500	5100
% of Ukraine	56½	50½	58½	65½	70	65½	67½	72	74½	73½

	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Ukraine	350	—	—	10	100	170	450	1280	2300	3800
Ural	400	150	130	90	130	195	400	870	945	940
Soviet Union	1300	180	150	150	260	400	900	2200	3400	5000
% of Ukraine	27	—	—	6	38½	42½	50	57½	67½	76

Russia, almost 6 % of that for Europe and more than 3.5 % of the world production of ore. It stood 4th in the iron-ore areas of the world, though well behind Lake Superior and the Lorraine-Luxembourg area.

In Kerch it was only towards the end of the 19th century that production became noteworthy, but even then it did not reach ½ million t. Pre-war figures were not reached till 1930: but the ratio of this contribution to the entire production declined for the same reason as in the Donets Basin. From 1929—1932 it was about pre-war level (72.5 %), but in 1937 it had sunk to about the level of the Donets coal (60.5 %) though two and a half times as much ore was actually produced. In the years 1933—37 the quantity produced amounted to 14.6 million t, i. e. 10 % of the world production. Kerch therefore came third in the iron-ore areas of the world (after USA with 39 and France with 33 million t., and before Sweden with 8.5 million t and England with 11.5 million t.).

3: Mirchuk S-4 (no date) 1949 RDF Ukraine RDI

Ukraine (1868—1937; in 1000 tons and %)

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1889	1890	1891	1892	1893	970	1245	1925	2120	3065
—	20	—	26	29½	1895	1896	1897	1898	1899
344	376	472	560	650	1210	—	1380	—	1620
—	1007	—	970	1030	2900	—	4100	—	5800
—	1900	—	2100	2200	33½	—	47	—	53

1910	1911	1912	1913	1914	1913	1914	1915	1916	1917
4260	5020	5780	6850	4800	6870	4800	4400	5500	3800
1180	1530	1850	1875	1085	1875	1085	—	800	510
5800	7000	8200	9300	6300	9200	6100	5700	6500	4500
73½	72	70½	76	74½	74½	78½	77	84½	84½

1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
4700	5700	7800	8000	8400	9300	13700	17000	17100	17200
1100	1770	1800	2000	3200	4100	6200	7680	(8300)	8700
6500	8000	10400	10700	12200	14500	21800	27100	27900	27800
72½	71	75	75	69	64	63	62½	(61½)	62

1886 marked the beginning of the production of manganese ore in Nikopil which reached 276 000 t in 1913, i. e. 22 % of the production for Russia and almost 12 % of that for the world. Ukraine came third after Georgia and India. In the year 1932/33 it even topped world manganese ore production with 483 000 t (the figure for the world being 1.5 % million, to which Nikopil contributed 32 %, Chiatury 20 %, India 15 %). From 1934 it slid down to the second place, though production actually increased to approximately 1 million in the years 1935—37 (more than a quarter of the world production)

4. Heavy Industry

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Heavy iron industry in Ukraine has unparalleled resources of raw material at its disposal. It is true that the coal reserves in the Donets Basin do not reach those of the heavy industries in the Ural and Western Siberia (70 milliard t, of which scarcely ¼ is of good coking quality, compared with 250 milliard t,

Table 10. Nikopil in World

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	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899
Nikopil	9	11	29	73	58	51	46	48	60	97
Chiaturi	140	102	170	70	97	170	160	320	280	549
Russian Empire	162	114	200	143	157	222	208	370	342	648
Nikopil %	5,5	9,5	14,5	50	38,5	23	22	13	17,5	15
India	—	—	—	—	12	16	58	75	61	89
Brazil	—	—	—	—	2	5	14	16	26	65
World Production	375	260	375	310	385	395	490	630	590	990
Nikopil %	2.5	4	8	23	15	12,5	9,5	7,5	8	10
Nikopil's place in world production	—	—	4.	1.	2.	2.	3.	3.	3.	2.

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Nikopil	239	276	227	187	100	9	0,5	6	42	111
Chiaturi	663	258	258	204	26	55	121	—	53	194
Soviet Union	907	537	472	393	126	66	125	12	103	313
Nikopil %	26,5	51,5	48	47,5	79,5	14,5	0,5	50	40	35,5
India	694	418	665	600	526	547	748	690	482	706
Brazil	184	289	503	533	393	206	354	276	341	236
Gold Coast	—	—	4	32	31	36	44	7	67	142
Egypt	—	—	—	—	—	49	78	55	104	132
World Production	1870	1410	1860	2080	1750	1160	1160	1180	1220	1750
Nikopil %	13	19,5	12	9	5,5	1	—	0,5	3,5	7,5
Nikopil's place in world production	3.	3.	4.	4.	4.	—	—	—	6.	6.

327 practically all excellent coal); nevertheless, they amply suffice for the industrial needs of Ukraine.

135 316 Ore resources, on the other hand, are considerably richer in Ukraine. The first-class deposits at Kryvyj Rih alone are only a little less than the equally excellent deposits in the Ural (1.2 milliard t, compared with 1.4 milliard t), but as the percentage prospected is low (30 compared with 52 %), it has reserves for the future in its thick seams of iron quartzite. The iron content of the Kryvyj Rih ore being higher, it has greater resources of pure iron metal (540 million t) than the Ural (411 million t). To this we must add the iron-ore deposits at Kerch (2.7 milliard t). The manganese resources of the Donets Combine are the largest in the world (400 million t.).

3: Mirchuk S-4 (no date) 1949 RDl Ukraine RDl

Production of Manganese Ore.

1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
90	66	57	34	59	149	162	272	180	151	178	202	239	276
661	370	415	377	332	342	826	678	117	612	554	469	578	966
755	443	479	414	396	498	994	956	302	765	733	674	820	1245
12	15	12	8,5	15	30	16,5	28,5	59,5	20	24,5	30	29	22
130	123	160	174	153	251	579	917	685	655	814	681	643	828
108	100	157	162	208	224	121	237	166	241	254	174	155	122
1330	970	1060	940	920	1140	1920	2360	1290	1690	1900	1640	1740	2350
6,5	6,5	5,5	3,5	6,5	13	8,5	11,5	14	9	9,5	12,5	13,5	11,5
4.	4.	4.	4.	4.	4.	3.	3.	2.	4.	4.	3.	3.	3.

1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
113	241	478	472	531	580	602	493	443	524	818	1037	(1270)	960
339	544	543	372	172	830	783	390	389	481	914	1180	1502	1650
459	787	1029	844	702	1410	1385	883	832	1021	1822	2385	3000	2750
24,5	30,5	46,5	56	75,5	41	43,5	56	53	51	45	43,5	(42,5)	35
816	853	1032	1147	994	1010	843	546	216	222	413	652	827	—
159	332	261	273	360	316	207	147	37	20	7	42	156	265
259	344	350	375	330	415	424	251	51	269	371	438	417	535
150	81	122	153	137	191	121	102	0,3	1	1	87	—	14[illegible]
140	2770	3130	3180	2960	3770	3530	2320	1290	1740	2970	4010	4920	—
5,5	8,5	15,5	15	18	15.5	17	21	34	30	27,5	26	(26)	—
6.	5.	3.	2.	2.	3.	3.	2.	1.	1.	2.	2.	2.	—

Deposits in the Ural only come second or third, even if they suffice for the needs of the Kusnetsk at the moment. The Donets Basin is particularly well supplied with subsidiary materials for heavy industry (limestone, dolomites, fire-proof alumina and graphite), there being deposits of the kinds required at Kryvyj Rih, Mariupil and Berdjanske. The distance between ore and coal is not too great to be unprofitable, viz. 350—450 km to the D[illegible]nets coal from the iron ore at Kryvyj Rih, 250—350 km from the manganese ores at Nikopil and 50—100 km between the two ore-fields. It is true that in England distances are more favorable, but they are no better than in Sweden, Germany, or France. Compared with the distance between the Ural ores and the Kusnets coal (2 000 km) conditions of propinquity are first-rate in Ukraine.

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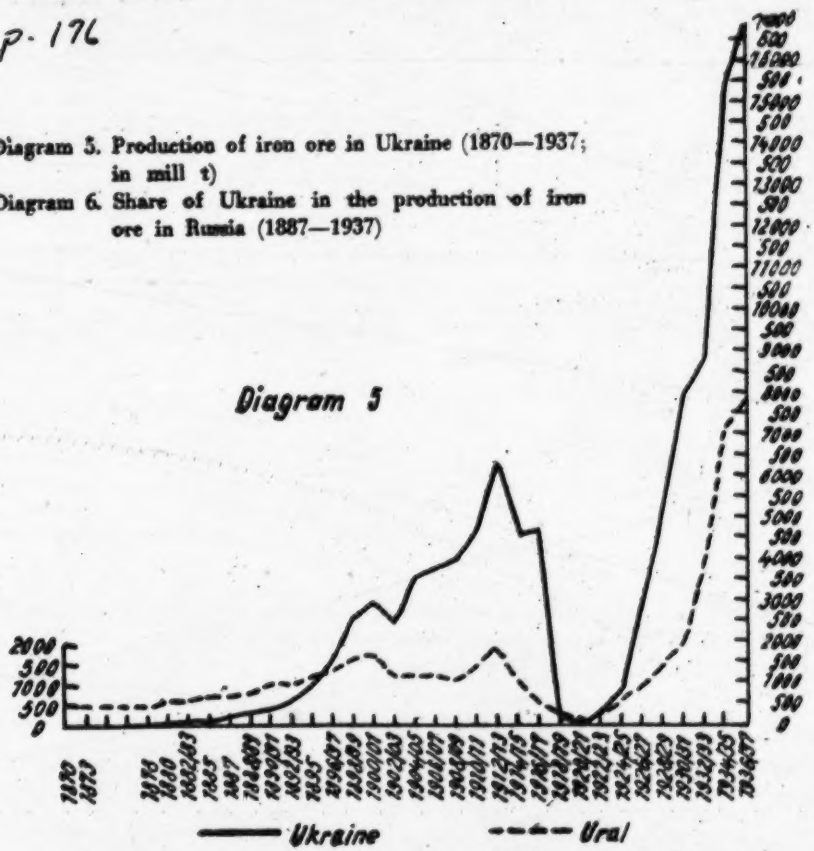
Diagram 5. Production of iron ore in Ukraine (1870—1937; in mill t)

Diagram 6. Share of Ukraine in the production of iron ore in Russia (1887—1937)



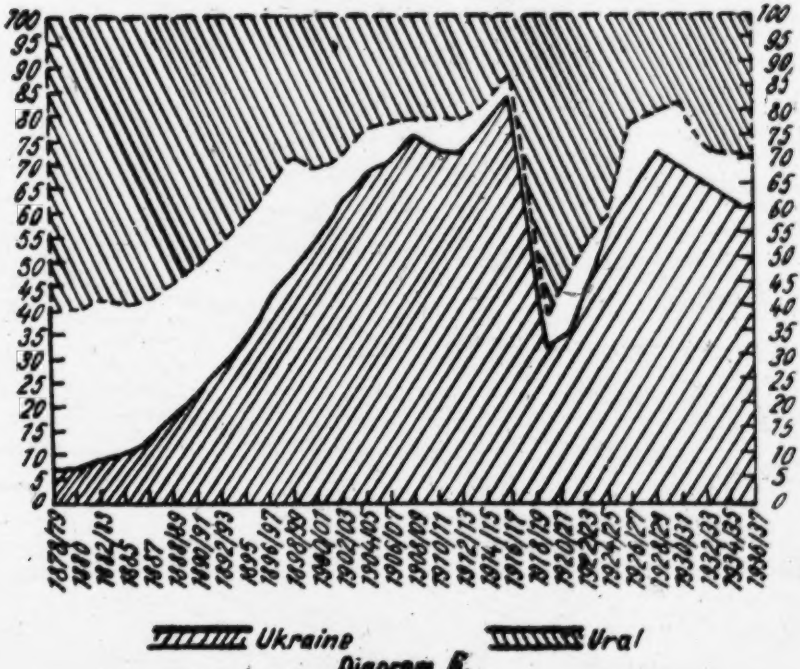


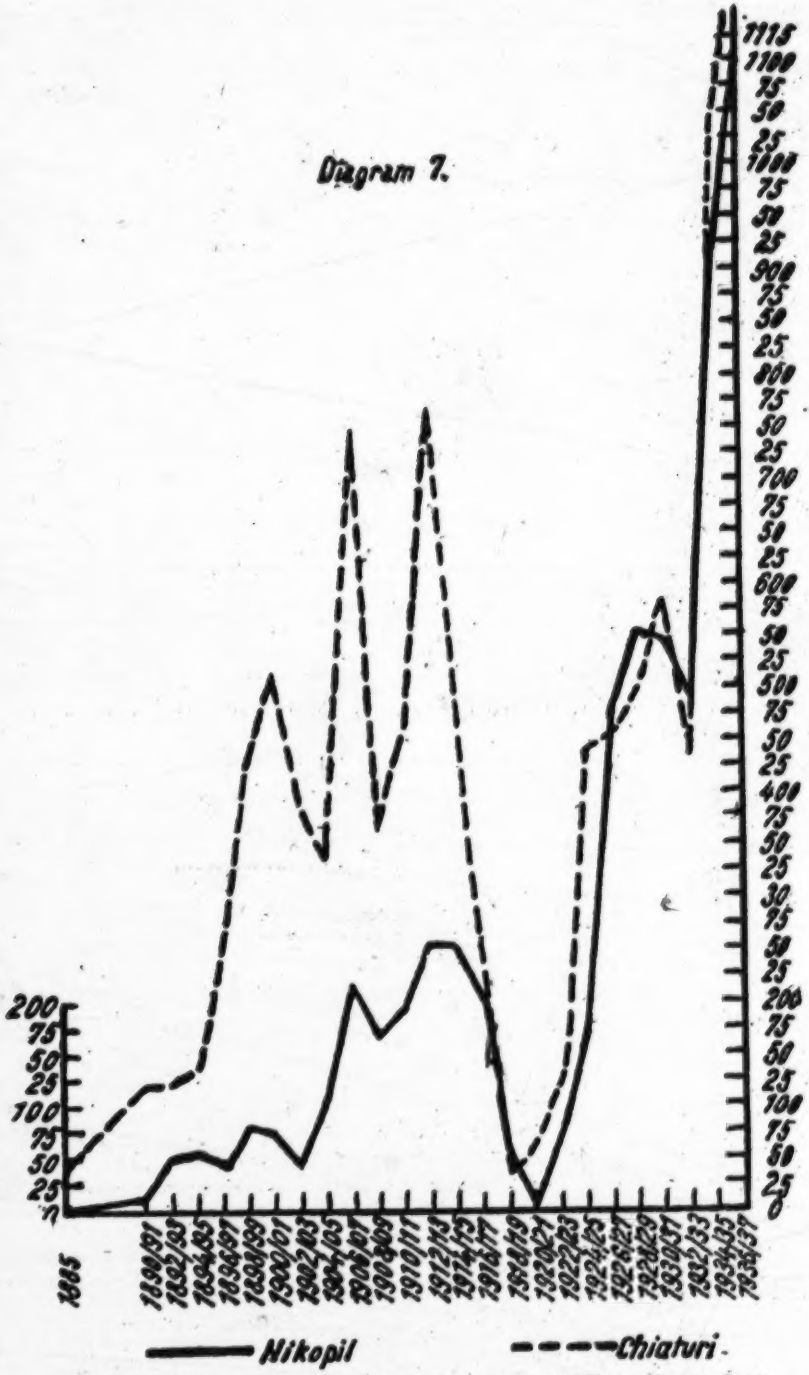
Diagram 6.

3: Mirchuk S-4 (no date) 1949 RDl Ukraine RDl

p. 177

316

Diagram 7.



Production of manganese ore in Ukraine (1885—1937; in thousand t.)

316

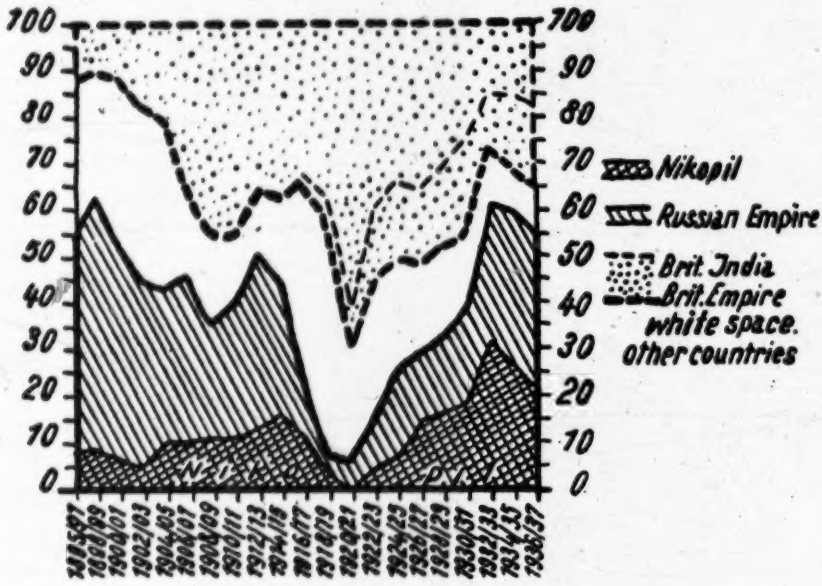


Diagram 8.

Share of Ukraine in the world production of manganese ore (1896—1937)

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471

quity are first-rate in Ukraine. Heavy industry in Ukraine was characterised from the beginning by the capitalist features that predominated in European production: protective duties and state orders greatly furthered development without handicapping other industrial centers. Pig-iron in Ukraine gradually rose to 19 % of the amount produced in all Russia. In the period 1887—1899 fifteen blast furnaces were added to the two which had been in operation since 1872. In 1913, ten of these were in the coalfields of the Donets Basin, two in the ore areas at Kryvyj Rih and Kerch and five between them. 48 blast furnaces produced 62 000 t each per year, while the 66 blast furnaces of the Ural only produced 12 800 t each and the 14 in the Central Russian area 12 100 t each and even the 11 modern furnaces in Congress Poland produced only 37 500 t each.

The following features were characteristic for Ukraine in contrast to the industrial area of the Ural:

1) a tendency to large-scale production, 2) an inclination for mass production, 3) a striving for concentration in production,

6. Production of Electricity, Brown Coal and Peat

377 In the production of electric current Ukraine has not made much progress. The figure for 1932 was 2800 million KWh (Germany 23460 mill. KWh, Italy 10230 million KWh, Switzerland 4800 million KWh, Belgium 3800 million KWh). Of the total current produced in Ukraine, 2045 mill. KWh were contributed by Dnipro-Ukraine, 474 million by North Caucasia, 211 million by Western Ukraine. 80 % of the electric current in Dnipro-Ukraine is generated by coal (⅛ by coal dust), 15 % by petroleum and only 5.5 % by water-power.

In the period from 1927—1933 the great hydro-electric plant was constructed at Dnipropetrovske (Dniprelstan, Russian Dnjeprostroj) with a capacity of 558000 KW; at the time it was the second largest hydro-electric plant in the world and was built by American engineers. It is a great feat of engineering. And yet scarcely 8 % of the available water-power has been exploited. The plant is of importance for shipping (in overcoming rapids in the river) and for the irrigation of arid areas, but also for industry. All manner of factories have sprung up round it — for the production of pig-iron, best-quality steel, metal and manganese alloys, aluminium, then chemical factories for sulfates, synthetic ammonia, soda etc.

316 The mining of brown coal started in the middle of the 19th century and produced from 1902—11 an annual average of 41000 t. This figure sank rapidly after World War I. The industry began in the district round Kyiv as a result of the erection of sugar factories and it also supplied several agricultural machinery plants, but it could not hold its own in competition with Donets coal. After World War I, the production of brown coal was systematically promoted and in 1934 had reached 0.3 million t. It is used by power plants and for the manufacture of briquettes. A start has been made to produce benzine by hydro-genetic processes.

The production of peat has also grown from modest beginnings (annual production before 1914 only 23000 t) to a considerable figure (1.1 million t in 1935). It is confined practically to Dnipro-Ukraine. It is utilised mainly by the agricultural indu-

stry, but also by power plants. On the whole, however, brown coal and peat have no great importance for Ukraine. 316

7. Petroleum and Gas

The petroleum industry was founded in Galicia about the middle of the 19th century. In 1909 Galicia (yearly production of 2 million t) contributed 5 % of the world production of petroleum and ranked third. But an uninterrupted decline set in, so that in 1937 its figure of 510 000 t was only 16th in world production. 382

The reason for this decline was the splitting up of landed property and backward methods of production. Some of the 25 refineries were on Polish territory. The crude oil is transported by rail. As the high paraffin content of Galician oil causes obstruction in pipes and as the oilfields are far from the sea and the market for this oil is in Central Europe, there has been no attempt to lay pipe lines.

In the Kuban area the figure for petroleum production was only 150 000 t in 1912, but this increased under the two first Five Year Plans to 1.8 million t in 1937. Since 1900 the petroleum is conducted by pipe from Maikop to Krasnodar, the pipe being 108 km long and able to send 900 000 t a year. In 1928 it was connected with the main pipe which is 618 km long and connects the Groznyj oil-field with Tuapse, a growing harbor on the Black Sea.

Since 1893 oil-wells have been bored in Groznyj. Shortly before World War I, these wells produced 1.2 million t, and in 1925 double as much, under the first Five Year Plan almost 7 million t yearly, under the second 3.7 million t. These varying yields testify to the wealth of oil, but also to the ruthless methods of exploitation, especially where oil is allowed to spurt out in jets. 315

In the Kuban area and in Groznyj oil refineries are equipped on modern lines. In the thirties $^3/_4$ of the entire petrol requirements of Russia were supplied from this area. Pipe lines also connect Groznyj with Mahach Kala on the Caspian Sea, 382 315

4: Allen H-4 (no date) 1941 RD1 Ukraine RD1

According to both German and Soviet geological calculations, the reserves of coal in the Donets area amount to about 55 milliard tons. The deposits are largely anthracite—inferior in quality to Welsh.

Donets coal was the basis of the early industrial development of the South of Russia. Exploitation was begun in the middle of the nineteenth century; the construction of railway lines speeded up development during the seventies, and in the eighties Donets coal was already in use in the industries of the Moscow and Petersburg regions. After the discovery, about 1890, of abundant iron-ore deposits to the west of the lower Dniepr, the Donets coal industry acquired a rapidly growing importance. Between 1900 and 1913 output was increased at the rate of 17 per cent per annum. In 1913 the Ukrainian part of the coal-field delivered 23 million tons: in 1916, 29 million. During this period the Donets fields supplied all the southern industries with coal, and its contribution to northern industries became important with the construction of a new line direct from the mine area to Moscow. More than half the coal industry, before the Revolution, was financed by French capital.

For some time after the Revolution the output of the mines was relatively insignificant: during 1919 the area was the scene of desperate battles between 'Whites' and 'Reds', and later it was devastated by the raids of Makhno and other anarchic *atamany*. The famine of 1921–2 accentuated the terrible conditions. During the period of the New Economic Policy, output of coal gradually revived, and in 1929 fell little short of that of 1913. The First Five Year Plan prescribed the accelerated industrialization of the Ukrainian mineral-bearing areas. The social struggle which formed part of the 'Revolution against Peasantry' did not particularly affect the Donets, but the famine of 1932–3 had its influence there. Nevertheless, if Soviet statistics are to be credited, the Government succeeded in coping with the difficulties, and in 1934 a production of 68 million tons of coal and anthracite was claimed—representing an output in excess of that of France. Ukrainian production occupied fourth place—after U.S., Great Britain and Germany. For 1938, Soviet statistics gave a production of 74 million tons out of a total of 104½ million tons for the whole of the Soviet Union. The average annual increase in production for the last five years, 1934–9, is substantially less than that for the preceding five years, 1929–34. One of the reasons for this is stated to be the difficulty of retaining labour which was available during the period of social conflict in the countryside, but which has drifted back to the farms following improvement in the conditions in the *Kolkhozy*. Labour

4: Allen H-4 (no date) 1941 RD1 Ukraine RD1

464 Labour is very fluid in Donbass; an annual turnover of 40–50 per cent is estimated.

135 Soviet official information concerning the iron-ore industry of Krivoy Rog is probably more reliable than that concerning 316 Donbass. The reserves of iron ore of high quality (40 per cent iron) are reckoned at 1100 million tons; some Ukrainian economists put these in excess of 3000 million tons. Mining in the Krivoy Rog (south-west of Ekaterinoslav and south-east of Elizavetgrad) began in the nineties and attained considerable proportions by the beginning of the present century. For the years 1913–16 average output was about 5 million tons per annum. According to Soviet statistics, output for 1938 was round 18 million tons.

Conditions for the development of metallurgical industry are extraordinarily favourable in New Russia: on one side of the Dniepr coal, and on the other iron. This is not all: along the banks of the Dniepr itself, round Nikopol and Khvochevatka, to the south of the old ground of the Zaporogian *Sech*, are rich mines of manganese, the quality of which is little inferior to that of the Georgian deposits at Chiaturi. According to the estimates of Ukrainian economists, reserves on the Dniepr amount to about 400 million tons: even if these estimates are exaggerated, there can be no doubt that the deposit is one of the most valuable in the world.

The production of the Dniepr manganese mines has risen from 260,000 tons in 1916 to over 1,000,000 tons in 1938. If the U.S.S.R. is the principal world producer, the Ukraine alone ranks before British India and South Africa (from which two latter countries it is worth recalling that Germany imported 585,000 tons in 1937).

The deposits of coal in Donbass, of iron at Krivoy Rog and of manganese round Nikopol are connected by railway lines which function probably more efficiently than any others in U.S.S.R. The juxtaposition of the mineral deposits and the metallurgical plants ensures full loads both ways. Only 18 per cent of Donets coal is exported outside the Ukraine, and only 5 per cent of the iron ore; the balance is consumed by the South Russian industries. Manganese, on the other hand, is exported abroad in large quantities.

325 Important metallurgical plants (70 per cent of the capital of 103 which had been found by French and Belgian houses) existed in the South of Russia prior to the Revolution. In the 'Eastern' (Donets-Azov) group were included the following works: 'The New Russian' (station, Yuzovka, recalling the name of the Welshman Hughes); 'The Russo-Belgian' (Enakievo); 'The Kramatorsky' (Kramatorskaya); 'The Konstantinovsky' (Konstantinovskaya); 'The Donets-Yuriev' (Alchevskaya); 'The Nikopol-Mariupol'

Ukraine Under the Soviets

186 563 The cities of Kiev, Kharkiv and Odesa had a large Russian population. The administrative, commercial and financial institutions were largely in Russian hands and the directors and leaders of these, whatever their political disagreements, were united in opposing the efforts of the Ukrainians to secure even that minimum of rights that they were guaranteed by Russian imperial law. The Russian element in Ukraine, radical or conservative, acted as a [316] unit during the fateful years 1917-1920. On the other hand, the miners and workers in the Donets basin and Kryvy Rih, the centre of the Ukrainian coal and iron industry, were in very large part likewise Russian and the ideology of St. Petersburg, especially in its radical aspects, was dominant throughout this part of the Ukrainian territory. Many of the most bitter opponents of Ukrainian rights were, in fact, Russian radical miners and workers from this area.

The Jewish population of Ukraine, a large minority, was little interested in the Ukrainian problem. Insofar as they were not actively sharing in the movement for special Jewish institutions, the majority, with certain conspicuous exceptions, were strong supporters of Russian unity, either conservative or radical or, like Leon Trotsky, they were at the service of any government which was opposed to the Ukrainian demands.

186 668 Thus in 1917 the strength of the Ukrainian movement was to be found in the villages. Here Ukrainian life was lived, Ukrainian thoughts and ambitions were sponsored and it was here that the vision of an old and a future independent Ukraine found its chief support. Even so, that population was itself divided, not according to the class principle but on an ideological pattern which included members of all classes and walks of life.

186 565 668 When the revolution broke out in 1917 or, to be more precise, when the tsarist regime collapsed, there were four main divisions in Ukrainian society and they were made clear within a very few months.

The first of these were the nationalists and the advocates of the restoration of order in the country. At the very beginning of the

Western world, the Soviet Union conferred upon the Ukrainian Soviet Republic the right to have its own anthem and its own national flag. 631 648

These actions were not to be interpreted as a concession from Moscow, although they were presented in that guise. They were rather intended to strengthen the Soviet position in international affairs and by an appearance of generosity to facilitate the reduction of the satellite states to the same position as that held by the Union Republics. In this sense they were a response to the centralizing tendencies which were now to be expressed in a still stronger form.

As soon as hostilities ended and even before the Soviets were assured of all their hopes, they began to purge again the Ukrainian Communist Party and within a few months some 38% of the high officials were removed on the ground of bourgeois nationalism. All those who had not retreated to the east or could not show that they were working throughout the war as zealous Soviet partisans were summarily exiled as bourgeois nationalists. In the same way, when the enforced return of displaced persons began under the Yalta Agreement, very few were allowed to return to their homes. The vast majority were either executed for surrendering to the Germans or were sent to the labor camps in the far north and east for reeducation. 665 661

The Fourth Five Year Plan which was commenced in 1946 was very definitely devoted to the restoration of the country after the ravages of the war and to the increase of the Soviet capacity for defense. It was only in Ukraine and Byelorussia that the restoration had to absorb the energies of a considerable majority of the population, for while there were areas in the neighborhood of Leningrad and Stalingrad which had been badly devastated, the situation in the Ukraine was far worse. The cities and factories had been destroyed, the mines had been flooded and the population were living as best they might among the ruins which had been left by the two invading armies. 727

At the same time the work of restoration went very slowly. Less than one third of the miners of the Donbas had returned to [316]

727 their posts and the vast majority of those who were Communists
316 received more or less sinecures above ground. Their places were
[466] taken by forcing the Ukrainian peasants, including a large percentage of young girls, to work in the pits with the minimum of safeguards. Little money was appropriated for the restoration of the damaged housing, for as the writer Korniychuk declared in one of his works, "Ukraine was so thankful for the success of Stalin that they did not care how they lived, for if he had perished, life would not be worth living under any circumstances."

727 With this attitude prominently emphasized by the leading propagandists, it is easy to see that the resources and energies of the population were directed by force rather toward those items that would advance the importance and the convenience of Moscow, than those that would be of advantage to the local population.

[496] The one exception was the necessity for rebuilding immediately and strengthening the railroad communications between the Donbas, Moscow, Leningrad and the Black Sea ports—in other words, the extreme eastern part of the Ukraine which was slated for a special development with roads and railroads linking the country up with the Russian centres rather than with the other Ukrainian centres to the west for these were regarded as exposed centres in case of a new outbreak of hostilities and were to be neglected until they were masked by the extension of Soviet power over the satellite countries.

474 The collectivized agriculture was in little better shape. In
341 that part of the Ukraine which had been under Soviet control before 1939, the authorities revived the collective farms but they had been so badly ruined that at first the authorities were often willing to be more considerate of the members. Immediately after the war they allowed them to group themselves into links or permanent sections of some eight to ten people who would thus come to feel themselves a distinct unit in the collective farm. It did not take long for the more rigid Communists to decide that this sense of permanence was in a way a defiance of the principles of collectivization, for very often members of the same household, if it were at all numerous, would group themselves into a link. In such cases the link became more prosperous, for it was in a way

7:Bregy & Obolensky H-4, 5 (no date) 1940 RD1 Ukraine RD1

popular for sea bathing, although the beaches still lack a good tourist organization.

Nevertheless this branch of the activities of the country could, under more favourable circumstances, give a stable revenue to the population and thus contribute towards the enrichment of the Ukraine.

III

The Subsoil and Industry

Among the mineral riches of the Ukraine the first place belongs to coal and to iron ore.

These two important raw materials are to be found in Zone 2½ coal in the Donietz basin and iron ore on the left bank of the Ingouletz (a tributary of the Boug) at Krivoi-Rog.

Besides these two fundamentally important resources the Ukraine possesses important deposits of manganese and aluminium in the surroundings of Nikopol, graphite and soft coal mines, recently discovered in the centre of the country, salt in the Donietz basin, and finally peat and oil wells in Polish Galicia, in the surroundings of Stanislavov. Geological researches recently carried out have led to the discovery of oil on the shores of the Sea of Azov.

In order to give an idea of the potential reserves awaiting exploitation in the subsoil of the Ukraine, let us indicate that before the last war production represented 135 gold francs per annum per inhabitant.

As a result of its naturally very rich geological structure and of the organization of the extraction of its resources, the basin of the Donietz could be compared with the best coal-producing centres of Europe. Its reserves may be less important than those of Siberia (Kouznetsk), 1/1 [see category 116, pp. 139-140 --- Analyst]

7:Bregy & Obolensky H-4, 5 (no date) 1940 RD1 Ukraine RD1

but they are estimated as having a depth of 1000 metres according to the most recent work undertaken by the Soviet Government, and the information given by German sources estimate them at 55 milliard tons, which makes these deposits almost inexhaustible.

By their quality the coals of the Donietz are among the very best, having a very high calorific value.

They give excellent varieties for heating and furnish coke for the metal industry, gas and liquid fuels. Rich in volatile substances, they are a raw material of the chemical industry.

The exploitation of the Donietz basin is relatively recent, beginning as it does only in the second half of the nineteenth century. This field has not known the methods of exploitation of the pre-mechanical kind which characterized the European pits and those of the Moscow region.

In the greater part of the mines the technical organization has already reached a high degree of perfection and continues to progress rapidly. This progress results in a great increase of extraction, the annual figure of which rises to-day to 75,000,000 tons (12,000,000 in 1900 and 31,000,000 in 1914), representing 65 per cent of the total production of the Soviet Union and exceeding that of France by 15,000,000 tons.

The application of mechanization to the extraction, an exploitation which is commercially more rational, and a better organization of labour in the sense of stabilization, of its specialization, and of the raising of the standard of living of the workers, could increase the production further by many million tons.

Two very important factors are favouring the rapid growth of the production of coal in the Ukraine. First it is the relative nearness, of 500 kilometres in a straight line, of the whole basin of the Donietz from the iron

7:Bregy & Obolensky H-4, 5 (no date) 1940 RD1 Ukraine RD1

316 mines of the Krivoi-Rog and secondly the presence between these two centres, in the surroundings of Nikopol, of important deposits of manganese, whose annual extraction exceeds 1,000,000 tons.

Actually the proximity of the mines of Krivoi-Rog, the resources of which, according to the exact estimates of geologists, are considerable (1 milliard 100 million tons of mineral which contains 40 per cent of iron), has allowed the distribution of the whole iron industry of the Ukraine between these two regions—that of the 316 Donietz and that of Krivoi-Rog. This centralization 489 allows one to utilize on the spot the enormous quantities of coal and of employing the railways in the most economical way, thus reducing the transport charges which are a heavy item in relation to a material.

The whole traffic between these two regions goes in two directions. The coal of the Donietz is loaded on trucks which are directed towards the Krivoi-Rog. These trucks return with a load of minerals. Thus a continual exchange takes place between these two centres, resulting in a very small circulation of empty trucks and thus creating one of the essential conditions of a rational exploitation of the railways.

316 The centralization of the Ukrainian metal industry 433 strongly favours its development. The Ukraine to-day occupies one of the leading places in the production of pig-iron (the fourth place, with 6,500,000 tons annually), of steel (third place, with 5,000,000 tons annually), and of sheet-iron (fifth place, with 3,000,000 tons annually).

327 The shaping of the metal and its transformation into metallic manufactured objects is equally concentrated on the borders of these two producing regions. Thus only 18 per cent of the coal of the Donietz and 5 per cent of the raw mineral of the Krivoi-Rog are exported from the Ukraine. The rest is shaped and worked on the

7:Bregy & Obolensky H-4, 5 (no date) 1940 RD1 Ukraine RD1

spot and leaves the country in the form of special steels, of sheet-iron, of all sorts of machines and tools, as well as of chemical products.

The two mining regions and the regions of Dniepropetrovsk possess forty-five furnaces having a volume of 25,000,000 cubic metres and more than 110 Martin ovens. Russian industry still depends to-day in great measure on the factories of the Ukraine.

As we have seen, the state of industry in the Ukraine, especially of heavy industry, is conditioned by the geographical position of its raw materials and of the sources of energy. All the metal is concentrated at Krivoi-Rog and the source of energy is represented in the first instance by the coal of the Donietz.

The peat bogs dispersed over the whole territory and whose extent does not exceed 400,000 hectares and the production 500,000 tons, and the brown coals the extraction of which is only 300,000 tons, can enter into the calculation only as auxiliary fuel of a definitely local importance.

The Ukraine, on the contrary, is well supplied with hydro-electric plant. This energy is mainly given by the station of *Dnieprogues*, better known under the name of '*Dnieprostroi*,' which means 'Construction on the Dnieper.' This name was especially valuable during the building of the station which, having been finished, has taken the name of '*Dnieprogues*,' an abbreviation of '*Dniepro*vskaia *Gu*idro-*E*lectritcheskaia *S*tantsia,' which means 'hydro-electric station on the Dnieper.' Built by the Soviets on the rapids of this river, it employs the energy and the power which reach 600,000 kwh.

In the other regions of the Ukraine the network of hydro-electric stations is relatively poor, as the rivers do not provide the necessary resources in this respect. The existing stations serve the mills, the oil mills, the sugar refineries, or the town stations of small power.

9: Prothero G-4 (no date) 1920 · RD1 Ukraine RD1

either by salting, smoking, or sun-curing. Fish-curing is carried on in factories at Odessa and Ochakov.

The fisheries in the Azov Sea are important, but the principal grounds are not in Ukrainian territory, those which lie within its limits being of insignificant value.

(4) Minerals

(*a*) *Natural Resources*

The principal mineral resources of the Ukraine are coal, iron, and salt.

The *coal* is all in one large field usually known as the Donets basin, which extends from west to east for a distance of 300 miles. It is considered the largest coalfield in Europe, but owing to peculiarities of the geological strata it is split up into several areas with varying qualities of coal. Roughly the flame coals are on the western end of the field, the coking and semi-anthracite coals in the centre, and the anthracite in the east, though coking coals are also found towards the north-east corner. Very little pure anthracite is mined on Ukraine territory, as the beds are mainly in the Don Cossack district. Throughout the field the seams vary much in thickness. Some are too thin to be worked. The average thickness of those worked is 21 to 35 in.; seams of 5 ft. are moderately common, and the maximum thickness is 7 ft.

The output of coal from the Donets field is variable. This is chiefly due to labour difficulties, which arise in unexpected ways. Nevertheless if the figures of several years are considered together, a great increase is shown, and new pits are being opened every year. The average production for the years 1908 to 1912 was over 14,000,000 tons, the proportion of bituminous coal to anthracite being as 8 to 1. The figures include the whole field, as separate statistics for the portion over the Don Cossack border are not issued.

Iron.—The Ukraine is fortunate in having in close proximity to its coalfield a district rich in iron ore. The deposit, which is of excellent quality and easily worked,

9: Prothero G-4 (no date) 1920 RD1 Ukraine RD1

is near the small town of Krivoy-Rog on the borders of the Governments of Yekaterinoslav and Kherson, between the town of Yekaterinoslav and the port of Nikolaev. This district has produced 95 per cent. of the iron ore mined in European Russia in recent years, and after supplying the needs of the numerous iron-works on the Donets coalfield and dispatching great quantities to other parts of Russia, it exports a large surplus through the ports of Nikolaev and Mariupol. This supply is eagerly taken up, principally by Great Britain and Germany.

The Krivoy-Rog iron is a brown non-phosphoric ore, containing about 70 per cent. of pure iron. The output is steadily increasing: the ore mined amounted in 1906 to 3,000,000 tons, and in 1910 exceeded 4,000,000 tons. There have been further increases since.

Deposits of *manganese* ore are found in the Government of Yekaterinoslav at Nikopol on the lower Dnieper, a few miles east of the Krivoy-Rog iron district. Exploitation began in 1886, and has been very successful.

The production, of which 75 per cent. is exported, fluctuates greatly according to the price of manganese abroad, and a maximum output of 300,000 tons in 1907 was succeeded by a fall to one-half this amount in 1909, with a slight recovery in the following years.

Mercury has been exploited since 1879 at Nikitovka, in the Government of Yekaterinoslav. The mineral is found in the coal measures near the surface. After being successfully worked for thirty years, the mines were closed about 1909.

Salt.—The Ukraine has valuable deposits of salt. There is an important mine of rock-salt near Bakhmut in the Government of Yekaterinoslav. Boring has been continued to a depth of 760 ft. without passing through the entire thickness of the salt bed; of this 340 ft. consists of pure salt.

On the edge of the Kouyalnitski lagoon, north-east of Odessa, there is a salt lake which produces enough

9: Prothero G-4 (no date) 1920 RD: Ukraine RD1

salt for the domestic needs and preserving industries of the neighbourhood.

Brine springs are worked at Bakhmut and at Slavyansk in the Government of Kharkov. The brine is pumped to the surface and the salt evaporated.

The salt production is increasing but slowly, and not in proportion to the needs of the preserving and curing industries of Russia; prices are rising and imports increasing. The average output for the years 1905–9 was 1,326,000 tons of pure salt, which was over 50 per cent. of the production of all Russia.

Building stone.—Quarrying for limestone is a great industry near Odessa, which is built of the local stone. Granite is quarried on the banks of the larger rivers, and Yekaterinoslav and other towns are largely built of granite, which is also used for harbour works and railway bridges.

Pottery clays.—Kaolin is found in the Ukraine, the entire output of Russia being produced within its boundaries. Clays of good quality exist in the Governments of Poltava, Kharkov, and Kherson, and supply material for the local domestic industry in earthenware.

(b) *Methods of Extraction*

There is nothing new or striking in the methods used for extracting the minerals mentioned; on the contrary, except where foreign capital is interested, they are on the whole not equal to those followed in western Europe and America. The greatest drawback is the low producing power of labour, for which no immediate remedy is to be found. There is room for improved machinery on a large scale, but unless the habits of the people change, the output per head will remain comparatively small.

(5) Manufactures

Manufacturing industry plays a relatively small part in the economic life of the Ukraine, the country not producing sufficient for its own wants and import-

11: Obermaier--170 J-3(no date)1942 RD1UkraineRD1

464 The tremendous increase in popula-
361 tion which the Ukraine showed after the liberation of peasants in 1861 found employment in the growing industry and in railroad construction, insofar as the surplus population did not prefer emigration to Siberia and eastern Asia. When there was less work on the farms, the farmers and farmers' sons traveled into the industrial regions, only to return to their villages at planting and harvest time. Thus a stock of Ukrainian industrial workers could not be formed; foreign Russian manpower immigrated and remained for good. In 1918 and 1919, when the Muscovite Bolsheviks broke into the Ukraine and the Russian industrial workers reinforced their ranks, the absence of a Ukrainian industrial working class was to make itself disastrously felt.

• 316 The world thinks of the Ukraine more as a granary than as asource of valuable raw materials. And yet, there are considerable treasures buried in Ukrainian soil. The reserve of iron ore in the Ukraine is the third largest in the world. At Krivoy Rog, 250 kilometers northeast of Odessa, according to the latest calculations there are deposited 1.25 billion tons of high percentage Bessemer ores (60 to 61% iron content) and also considerable quantities of ferruginous quartz. In Kerch on the easternmost spur of the Crimean Peninsula there are 2.7 billion tons of phosphorous ores with an iron content of 38 to 42%, and in the northern Caucasus there are smaller deposits. The following table shows the importance of Ukrainian ore extraction for the Great
439 Russian realm: /Facing page 160/ /Map XI: Iron Ore and Steel Export from the Soviet Ukraine (Average 1927/1928). The Ukraine was the great source of steel for the industrial works around Moscow and Leningrad./ /161/

316

	Iron Ore Extraction in million tons		
	1913	1932	1935
Krivoy Rog.....	6388	7925	16,594

Iron Ore Extraction
in million tons(contd)

	1913	1932	1935
Kerch.....	0.480	0.516	0.136
Ural.....	1778	3054	7684(98)

98. Kubiyovich: Geography of the Ukrainian and Bordering Areas, page 447.

Well-known are the largest manganese ore deposits of the world between Krivoy Rog and the Dniepr with a reserve of approximately 400 million tons and a net content of mostly 36 to 48%. The amount of copper and mercury mined in the Donets Basin is insignificant, but the nickle deposit newly discovered in 1936 at the mouth of the Dniestr near Akkerman is very promising.

Ukrainian heavy industry is based, furthermore, on important deposits of hard coal and brown coal. There are smaller deposits along the Kuban River, but more extensive coal mines are in the Donets Basin, also called "Donbas". The total reserves of this region are estimated at 70 billion tons. The coal is deposited in three layers, at the bottom anthracite, in the middle stone coal and on top brown coal which in part can be mined in open diggings. About 58% of the Donets coal is anthracite; this is 70% of the European anthracite reserves. Only 25% of the Donets coal is brown coal and suitable for heavy industry. (99) The

99. Deminskiy: The Economy of the Ukraine, page 136.

entire extraction of coal in the Donbas amounted to 25.2 million tons in 1913, 45.1 million tons in 1932 and 61.7 million tons in 1934. The amount mined in the rest of the Soviet Union, on the other hand, was only 32.3 million tons, and in Germany (including the Saar) in the same year, 136

316 million tons. The beds in the Donets Basin have the advantage of being shallow and the disadvantage of being unevenly distributed and not very large. They are only three-quarters of a meter in diameter. Besides, the coal is impure and also has a high ash content. In spite of the fact that more is produced, the method of mining is antiquated.

Besides the incidence of brown coal in the Donets region, there are 120 smaller deposits in the right-bank region of the Ukraine, but they /162/ are scarcely exploited. It is presumed that there are larger deposits in this region also. In 1935 the total reserves of brown coal in the Soviet Ukraine were estimated at 550 million tons. (100) The mining of this coal is very much neglected and ore-dressing is unknown. In 1935 a total of 300,000 tons of brown coal was extracted in all the Ukrainian provinces, 240,000 tons of which came from eastern Ukraine. (101) The extensive peat bogs are merely of local importance.

100. Kubiyovich: Geography of the Ukrainian and Bordering Areas, page 442.

101. Deminskiy: The Economy of the Ukraine, page 137.

315 135 When it comes to oil, the Ukrainian earth is not niggardly. Well-known as the oil fields of Drogobich and Borislav on the northern slope of the Carpathians, the reserves of which are estimated at 58 to 100 million tons. Extraction reached its height as early as 1902 when it amounted to 2 million tons or 5% of world production. Since then it has constantly decreased, amounting to 1.1 million tons in 1913 and an annual average of 500,000 to 600,000 tons from 1932 to 1936. (102)

102. Kubiyovich: Geography of the Ukrainian and Bordering Areas, page 443.

Coal

316 433 The coal centre of the Ukraine is the basin of the Donets River, a tributary of the Don. In 1913 the Donets region was producing 80 per cent. of all the coal turned out in the entire Russian Empire. (23 million tons of the 29.2 million total); and even in 1940, when the production of other coal areas in the U.S.S.R. had been greatly expanded, and many new areas explored and put into operation, Donets mines still accounted for more than half the total output (83.8 million tons of the entire Soviet Union production of 164.6 million).

Since about 70 per cent. of all the fuel consumed in the U.S.S.R. is supplied by coal,[1] the rehabilitation of the Ukrainian coal industry is of tremendous importance to the economy of the Soviet Union.

727 316 It is now over three years since the Soviet Army drove the Germans out of the Donets Basin. Before their rout, the enemy flooded the mines and burned engineering plants, miners' settlements, and cities. Restoration work was started soon after the liberation of the Basin, but it was estimated that to restore coal output to the pre-war level it would be necessary to pump 650 million cubic metres of water out of the mines and to restore 1,565 miles of mine galleries.[2] Today, the towns of the Donets Basin are a mass of scaffolding, as war-devastated houses, buildings, and roads continue to be repaired. Mine derricks dot the landscape; and water is being pumped in a steady stream from the mine pits. At the Chelyuskin Mine which before the war was one of the biggest and best eqipped in the Donets, over nine million cubic metres of water had been pumped by the middle of December 1946; and about 20 miles of galleries had been restored. Coal output averaged a thousand tons a day.

By January 1947 about 142 major coal mines of the 279 operating prior to the war had been restored, and 430 smaller ones, rehabilitated or built anew, were in operation. Production was nearly half of pre-war.[3]

[362] As regards housing for Donets workers, it is planned within the next five years not only to restore the houses demolished by the Germans, but also to build another 20 million square feet of housing space in the Donets Basin; in 1946 alone over four million square feet of floor [464] space had been reconstructed. Thousands of miners are being helped to build their own homes; and measures are being taken to increase their food supplies.

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1 Moscow Radio feature, "Sidelights on Soviet Life," cited in Soviet Monitor, London, January 29, 1947.

2 Soviet Monitor, London, September 12, 1946

3 Soviet Monitor, London, January 23, 1947

Coal: Plans for the Future

185 433 316 Under the Five-Year Plan, the coal industry of the Ukraine is to be speedily rehabilitated and further developed, so that by 1950 its output will be 86,100,000 tons, including about 6 million tons of brown coal (lignite).[1] When it is remembered that this target is only 2.3 million tons over 1940 production, the enormous task of rehabilitation confronting the industry is made clear. The difficulties are even more accentuated if one compares the increase of coal production in three pre-war years, from 1937 to 1940, when output leaped from 70 million tons to 83.8 millions.

Plans for increasing the future coal output of the Ukraine include not only the restoration of old mines but also intensive prospecting and the sinking of many new shafts.

"Between 1946-50, coal mines with an aggregate capacity of 77,500,000 tons are to be put into operation in the Stalino and Voroshilovgrad regions of the Ukrainian S.S.R.[2]"; and coal fields in other areas are to be further developed. In particular there are to be put into operation in the Donets Basin and in the western regions of the Ukraine, small coal mines and drifts with a total capacity of 4,600,000 tons of coal, and peat briquette plants with a capacity of 50,000 tons.

The lignite mining industry is to be developed and by 1950 is expected to supply annually some 6 million tons of coal. Five lignite mines operating in the Ukraine in 1946 increased their output in October by three times as compared with April.

135 654 Large coal supplies are expected from the regions west of the Dnieper, where 11 promising coal deposits are located. Prospecting is in progress there, as well as in the Zlochev, Krenenets, and Kolomya areas of Western Ukraine, where 28 shafts had been sunk by November 1946.[3]

Industrial lignite deposits have also been found in an area of four square miles between Slavgarod and Sinelhikovo (near Dniepropetrovsk) and in the Transcarpathian region.

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1 The coal output of the entire Soviet Union in 1950 is fixed at 250 million tons.

2 The Five-Year Plan, 1946-50

3 Soviet Monitor, London, November 21, 1946.

135 654 To the south-east, in the Don and northern Donets valleys, geologists have discovered a number of new coal-bearing areas, and have confirmed that the Donets Basin coal layers stretch far to the east and south.

Other investigations of coal-bearing areas are to begin shortly, particularly around the Azov Sea coast and in other regions bordering the Donets Basin.

Coke

316 The coke output of the Ukrainian S.S.R. in 1950 is planned to be 15,500,000 tons.

Natural Gas and Oil

315 183 With the incorporation of Western Ukraine in 1939, the Ukrainian S.S.R. came into possession of oil producing regions. The Five-Year Plan calls for the intensive development of these and other areas of the Ukraine for the increased production of oil and natural gas. Three hundred and twenty-five wells are to be located to add to the [654] petroleum resources of the western regions; prospecting for commercial deposits of petroleum in the Rozny area is to be completed; and there is to be extensive geological exploration for natural gas in the Dragobych Region (Western Ukraine) and on the Azov and Black Sea coasts.

[382] The total output of petroleum in the Ukrainian S.S.R. in 1950 is fixed by the Five-Year Plan at 325,000 metric tons.

The plan also provides for the building of a gas pipeline from Dashava to Kiev. Already in process of construction, the first section of the pipeline will be completed this year (1947) and will supply gas to more than 30,000 flats and several large industrial plants in Kiev.

Electric Power Stations

377 Electrification has been one of the outstanding features of the Soviet economy. Before the war the Ukrainian Republic possessed a wide network of electric power stations. Best known was the huge Dnieper Dam and Lenin Hydro-electric Station, completed in 1932 near Zaporozhie. This station supplied electric power to a great industrial region: in the north the steel mills of Dniepropetrovsk and Dnieprodzerzhinsk, and to the south-east, the Nikopol manganese mines. These three industrial centres developed quickly after the Dnieper Dam was built; and the abundance of cheap power available from it also gave rise to the growth of a metal and machine-building centre at Zaporozhie.

23: Shabad N-4 (no date) 1951 Rl Soviet Union Rl
Ukraine RD1

and Czechoslovakia (1945) that most Ukrainians of eastern Europe became united into one territorial entity.

The present administrative-territorial system was introduced into the Ukrainian SSR in 1932 by the creation of seven oblasts. By 1939 the number had increased to fifteen. Following the partition of Poland, in 1939, and the annexation of the Western Ukraine to the Ukrainian SSR, six more oblasts (Volyn', Rovno, L'vov, Drogobych, Ternopol', and Stanislav) were added. In 1940 Rumania ceded Bessarabia and Northern Bukovina to the USSR. The extreme northern and southern sections of the territory were incorporated into the Ukrainian SSR as the Chernovtsy and Izmail oblasts in view of their predominant Ukrainian population. However, the Ukraine lost the greater part of Moldavian Autonomous SSR (formed in 1924) when the Moldavian territory was joined to the central part of Bessarabia to form the newly constituted Moldavian SSR. Seven districts (rayons) of the Moldavian Autonomous SSR, including those of Balta and Kotovsk remained in the Ukrainian SSR as part of the Odessa Oblast, due to the predominance of a Ukrainian population. In 1945 the western frontier of the Ukrainian SSR was changed in favor of Poland with the adoption of the so-called "Curzon line," which left the city of Przemyśl (Russian *Peremyshl'*) and areas to the northeast and southwest, along the San River, to Poland. In June, 1945, the Carpatho-Ukraine, or Ruthenia, was transferred from Czechoslovakia and constituted into the Transcarpathian (*Zakarpatskaya*) Oblast. At present the Ukrainian SSR is divided into twenty-five oblasts.

The economy of the Ukrainian SSR combines a rich agricultural development with a powerful mining and metallurgical industry, based in particular on the coal of the Donets Basin and the iron ore of Krivoy Rog. As a result of the industrialization of the USSR, the Ukraine became not only a basic grain-exporting region of the USSR, as well as an area of intensive agriculture and agricultural industry, but also the major coal and metallurgical base and heavy-machine construction center of the USSR. The Ukraine has more than one fifth of the total sown area of the USSR and produces one quarter of the grain, two thirds of the sugar, three fifths of the coal and pig iron, one half of the salt and about one fifth of the machines and chemicals.

In 1940 the Donets Basin furnished 85 million tons of coal per year. It supplied not only all the industry of the Ukraine itself but also the

23: Shabad N-4 (no date) 1951 R1 Soviet Union R1
Ukraine RD1

metropolitan areas of Moscow, Leningrad, and other industrial centers, as well as the entire southern rail network of the USSR west of the Volga and south of the Moscow coal basin. During the period of the German occupation of the Ukraine (1941–43), the coal mines suffered greatly. At present, reconstruction work is in full swing, mines are being reestablished, and it is hoped to have reached prewar production by the end of the post-war Five-Year Plan. The major coal-mining centers are Stalino, Yenakiyevo, Gorlovka, Kadiyevka, Chistyakovo, Krasnyy Luch, and Sverdlovsk. Anthracite, used principally for fuel, is mined in the eastern and the southern sections, while coking coal is produced in the western and the northern parts of the Donets Basin.

The giant iron and steel mills of the Ukraine lie mainly in the western part of the Donbas, that is, in the coke-supplying area, in the Krivoy Rog iron basin, and along the Dnieper between these two raw-material sources. Among the mills producing over one million tons of pig iron per year are modernized prerevolutionary plants at Makeyevka (Donbas), and at Dnepropetrovsk and at Dneprodzerzhinsk on the Dnieper and new plants at Krivoy Rog, Zaporozh'ye, and Zhdanov. The Azovstal' mills at Zhdanov use Kerch' (Crimea) iron ore, which is shipped across the Sea of Azov.

Machine construction has been developed to a very large extent in the Ukraine in recent years. Due to the close proximity of the sources of metal and in view of the lack of skilled local labor, the Ukraine was designed to produce types of machinery requiring little precision work, but large amounts of metal. Plants located in the Donbas specialize in heavy machine construction; among them, Kramatorsk produces coal-mining and steel-milling machinery, and Voroshilovgrad has a large locomotive works. Agricultural machinery plants are located along the Dnieper and on the right bank. Khar'kov possesses a large tractor plant and locomotive works and produces hydro-turbines and electric motors. There are car-building works at Nikolayev and Dnepropetrovsk, shipyards at Nikolayev, Kherson, and Kiev, and oil-drilling machinery is made in L'vov.

The industrial picture of the Ukraine includes a number of factors suitable for the establishment of a strong chemical industry: the by-products of coking and metallurgical processes, the presence of such important raw materials as salt and phosphorites, the availability of cheap energy produced by coal-fed (*Zugres* and *Shtergres*) or hydroelectric (*Dneproges*) power stations, and finally the need for chemical products

23: Shabad N-4 (no date) 1951 R1 Soviet Union R1
Ukraine R01

region, having 35 percent of the reserves of the USSR, and the site of soda works.

Debal'tsevo is one of the chief rail centers of the Donets Basin.

Chistyakovo, to the south, is a major coal-mining point.

Zhdanov, called Mariupol' until 1948, the principal port for the Donets Basin, on the Sea of Azov, is the seat of the new Azovstal' metallurgical works, one of the largest of the region. It also has the Il'ich works, which produce special steels, shipyards, and fish canneries.

Voroshilovgrad Oblast

Area, 10,300, population, 1,800,000

Voroshilovgrad Oblast is the easternmost division of the Ukrainian SSR. It includes the eastern portion of the Donets Basin and extends northward into a typical Ukrainian wheat and sunflower region. Most of its coal mines produce anthracite.

Voroshilovgrad, formerly called Lugansk, has large locomotive works and metallurgical and pipe-rolling mills and produces enameled goods and mining machinery.

Voroshilovsk (formerly Alchevsk) has metallurgical and coking industries. Just south is the coal-mining city of Parizhskaya Kommuna [Paris commune].

Kadiyevka, called Sergo from 1935 until 1943, and Krasnyy Luch are the two main coal-mining centers of the oblast, with many large satellite towns grouped near by. Almaznaya, southwest of Kadiyevka, produces special steel alloys. Lesser coal centers in the southeastern section of the region are Krasnodon, Sverdlovsk, and Roven'ki.

Rubezhnoye, in the northern coal district, on the Northern Donets, has large chemical (explosives) works, and produces paints and glass.

DNIEPER BEND

The Dnieper Bend, which includes Dnepropetrovsk Oblast and the adjacent section of Zaporozh'ye Oblast, is the second center of heavy industry in the Ukraine. Metallurgy, which is largely based on Krivoy Rog iron ore and Nikopol' manganese, is the principal branch of the industry. It receives its coal and flux materials from the Donets Basin. Unlike the Donbas, which frequently suffers from a shortage of water, it is amply supplied with water from the Dnieper River, which is also the source of most of its electric power. The main industrial centers lie